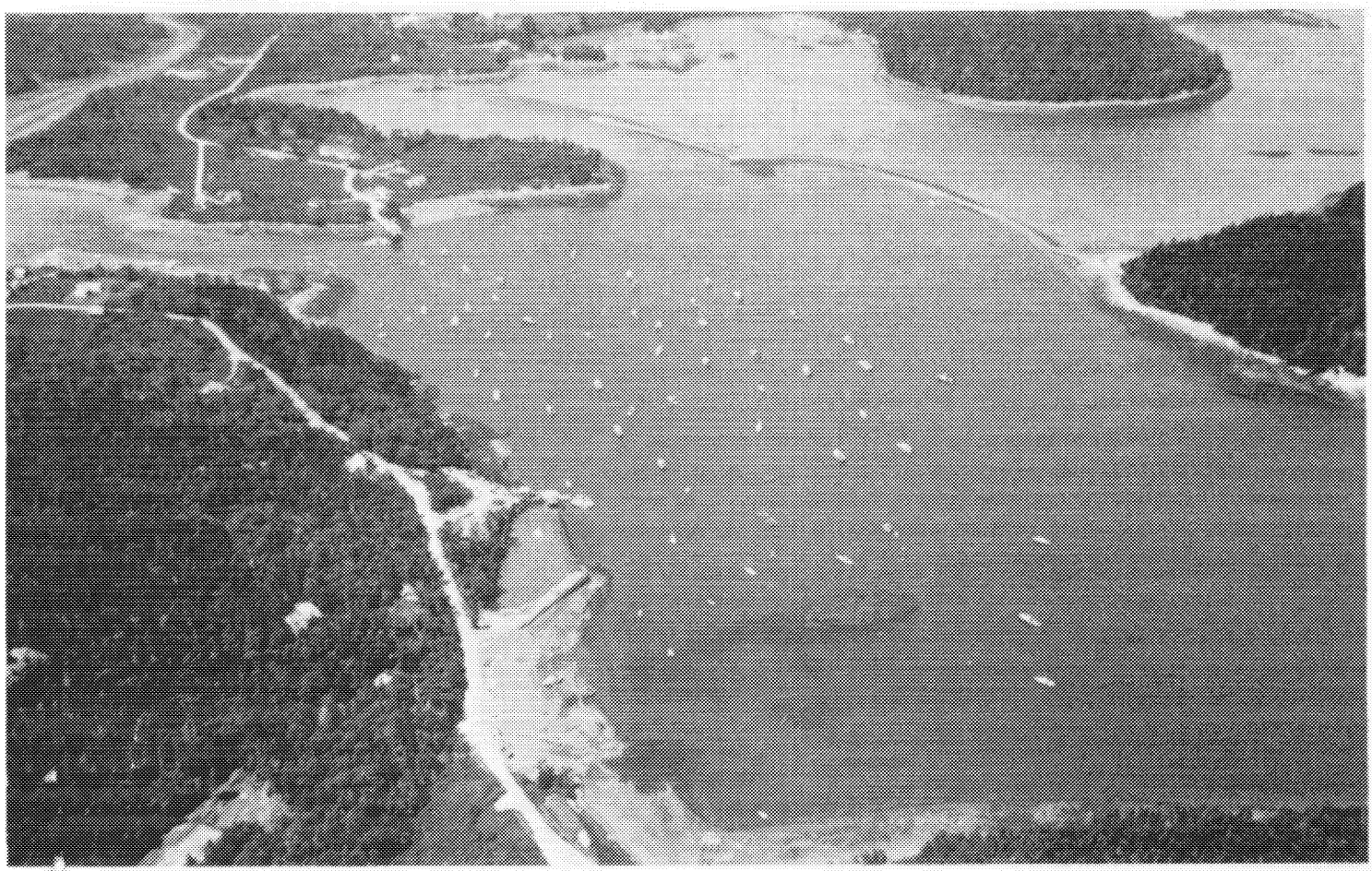
Navigation Improvement Study

Reconnaissance Report

Bucks Harbor
Machiasport, Maine



US Army Corps
of Engineers
New England Division

JAN 1990

BUCKS HARBOR, MACHIASPORT, MAINE

SMALL NAVIGATION IMPROVEMENT STUDY

RECONNAISSANCE INVESTIGATION

Prepared By

NEW ENGLAND DIVISION
U.S. ARMY CORPS OF ENGINEERS
WALTHAM, MASSACHUSETTS

SYLLABUS

This Reconnaissance Report was prepared under authority of Section 107 of the River and Harbor Act of 1960, as amended, for Bucks Harbor, Machiasport, Maine and provides for the following: (1) presents the identified navigation problems, needs, and opportunities of the project area, (2) presents an economically justifiable solution to the noted problems, (3) provides a solution suitable for Federal implementation and local acceptability, (4) presents the willingness and capability of the non-Federal project sponsor to comply with cost sharing requirements for the feasibility study phase, as well as project construction.

The feasibility study would identify and recommend the most economically efficient solution to the navigation problems. Federal interest and local acceptability in the recommended improvement project would be determined at that time. More detailed engineering investigations, economic analyses, and an environmental impact assessment, would be accomplished in the feasibility phase. The feasibility study would also develop a draft Local Cooperation Agreement detailing Federal and local sponsor construction cost sharing responsibilities.

This reconnaissance study has examined the feasibility of modifying the existing Federal navigation project in Bucks Harbor. The existing Federal project provides for 11 acres of anchorage area 8 feet deep at mean low water (MLW) and about 2 acres of maneuvering area also at 8 feet MLW, servicing the commercial fishing fleet. Navigation problems currently experienced by the commercial fishing fleet are congestion related delays and damages, due to overcrowding as all 13 acres of the existing Federal project are used for open mooring; lack of a clear access channel to the town Fish Pier; and the lack of protection from storm conditions.

Two improvement plans, formulated to relieve the noted navigation hazards, were evaluated. Plan A provides for an access channel 100 feet wide by 8 feet deep MLW that would extend from the town Fish Pier to deep water in Bucks Outer Harbor; 3.3 acres of additional anchorage at a depth of 8 feet MLW; and 1.3 acres of new anchorage area dredged to 6 feet MLW. Plan B proposes the same navigation features as Plan A but with the addition of a breakwater for increased protection from storm conditions. At the reconnaissance level of detail, construction of the breakwater lacked economic justification.

Implementation of Plan A was determine to yield annual benefits of $242,000 and annual costs of $45,000 resulting in a benefit to cost ratio of 5.4.

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NEW ENGLAND DIVISION
U.S. ARMY CORPS OF ENGINEERS
WALTHAM, MASSACHUSETTS

BUCKS HARBOR
MACHIASPORT, MAINE

RECONNAISSANCE REPORT

INTRODUCTION

This report presents the findings of a reconnaissance level investigation. The objective of the study was to determine the feasibility of Federal participation in implementing navigation improvements in Bucks Harbor, Maine, as a basis for proceeding into the final or feasibility study phase. The report consists of a main report, and an environmental review, economic analysis, and pertinent correspondence, appendices.

Bucks Harbor is located in the town of Machiasport, Maine on the west coast of Machias Bay (see Figure 1). The harbor lies 70 miles east of Ellsworth, Maine and is situated along U.S. Route 1, about 25 miles west of Lubec, Maine and the Canadian border.

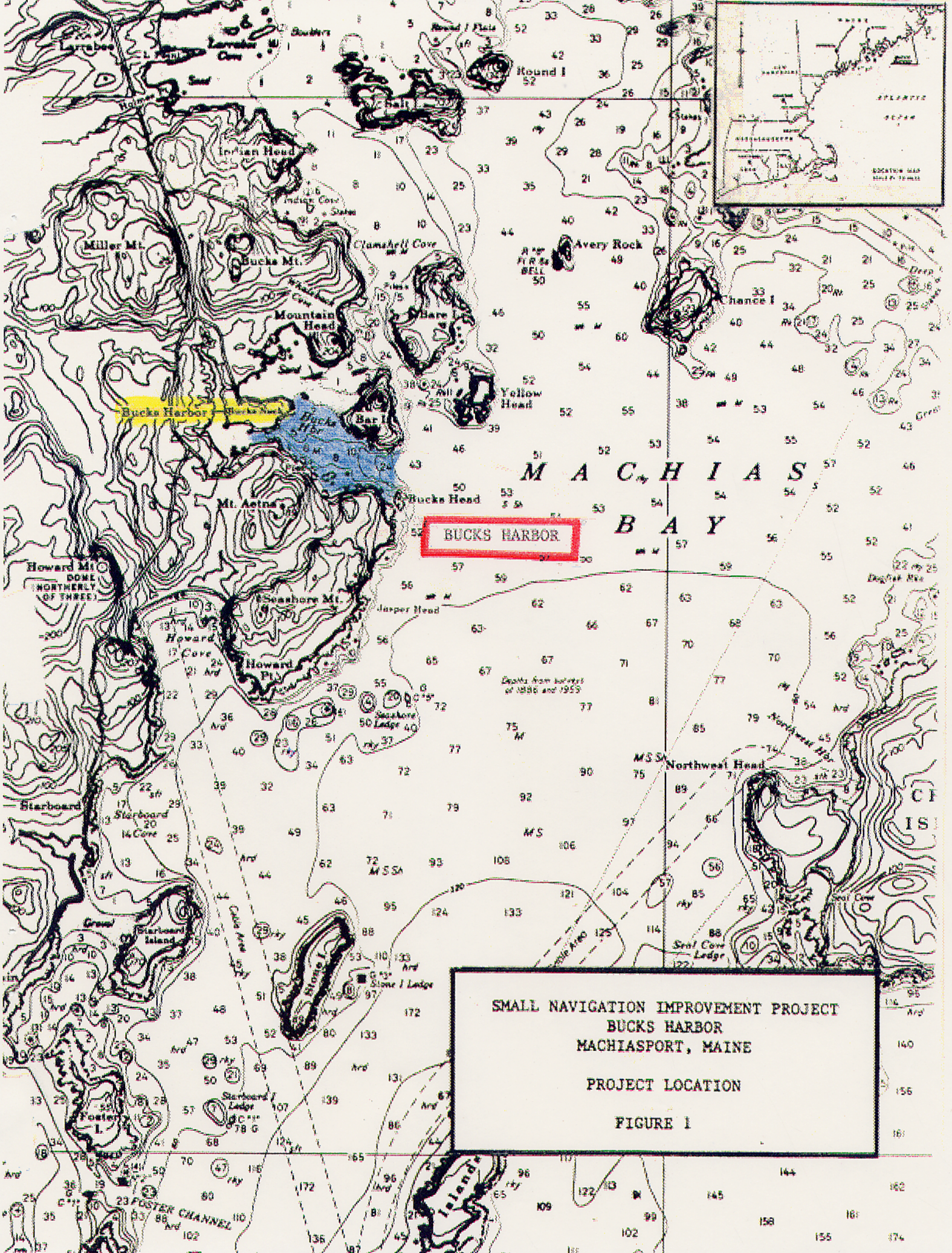
STUDY AUTHORITY

This reconnaissance investigation was conducted under the authority of Section 107 of the River and Harbor Act of 1960, as amended.

STUDY PURPOSE AND SCOPE

This study was initiated at the request of the town of Machiasport, Maine by letter dated March 5, 1987. The Town requested an investigation of the feasibility of Federal involvement in providing navigation improvements, specifically, additional deep water anchorage and storm protection for the commercial fishing fleet based in Bucks Harbor.

This reconnaissance study is the first of a two part total study effort with the second phase being a Detailed Feasibility Study. The planning scope of this study is preliminary and limited to examining navigation improvements in Bucks Harbor for commercial fishing interests. Geographically, the study area concentrated on Bucks Harbor, Machiasport, Maine and the immediate vicinity. The intent of the reconnaissance phase effort is to determine whether Federal involvement should proceed further based on a preliminary appraisal of Federal interest. This was determined through a multi-disciplined analysis of alternative plans of improvement including engineering feasibility and costs, economic justification, and environmental, archaeological/historical, and cultural acceptability. Alternative navigation improvement plans examined during this study phase were designed for the commercial navigation interests in Bucks Harbor and are in concert with the current policies and budgetary priorities of the Corps of Engineers.



SMALL NAVIGATION IMPROVEMENT PROJECT
BUCKS HARBOR
MACHIASPORT, MAINE

PROJECT LOCATION

FIGURE 1

PRIOR STUDIES AND REPORTS

FEDERAL: The feasibility of providing a Federal navigation improvement project in Bucks Harbor was first studied in 1967. Prior to this, there had been no improvement projects by either Federal, state, or local interests. A study, under the authority of Section 107 of the River and Harbor Act of 1960, as amended, examined the justification and acceptability of providing navigation improvements to relieve the commercial fishing fleet of excessive storm damages, and tidal delays and damages. Submitted in 1971, and adopted in November 1972, the Corps of Engineer's study recommended construction of a navigation project. The recommended plan the and eventual project which followed is shown on Figure 2. It provides for an 11 acre anchorage dredged to 8 feet deep at mean low water (MLW), in what is known as the outer harbor. The constructed project consists of 13 acres allowing for an open fairway for transiting the anchorage. Disposal of the dredged material was at an open water site located approximately 2 miles southeast of Bucks Harbor. The project was completed in July 1974 at a cost of $277,000. As this project was solely for commercial interests and based on cost sharing policies of the time, construction costs were 100 percent Federal.

In 1977, the town of Machiasport requested that the Corps study the feasibility of providing modifications to the existing project. Problems noted were waves breaking in the vicinity of moored boats which caused damages and shoreline erosion. This was reported to be caused by a radical change in bottom contours where the Federal project limits and the natural bottom meet. Two alternatives were developed to rectify the situation however neither were economically justified. An unpublished negative letter report was produced by the Corps in 1977.

NON-FEDERAL: In 1986 the town of Machiasport, with funding received from the State of Maine, engaged the services of an engineering consulting firm to assist in developing a harbor management plan including onshore services, vessel mooring and storm protection. The report presented plans for onshore improvements related to commercial fishing interests, and anchorage and breakwater designs.

In November 1988 the town received a Coastal Zone Management (CZM) grant to study waterfront planning. This included shoreline ordinances and zoning, identification, improvement and/or construction of possible public access points in the harbor for a new public pier and boat ramp.

MUD FLATS

BUCKS NECK

COVE (1970)

CO-OP FISH PIER

SPRAGUE & LOOK WHARF

BAR ISLAND

OUTCROP (1970)

GORGE (1970)

OUTER HARBOR

INNER HARBOR

13 ACRE ANCHORAGE
8 FEET M.L.W.

LAWN (1970)

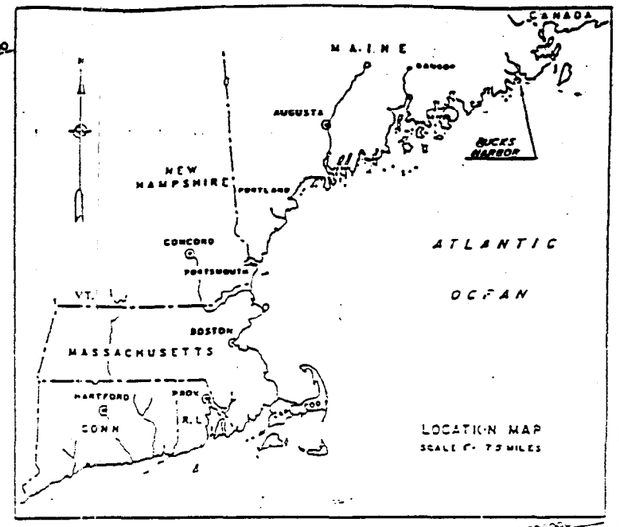
BIRCH (1970)

URQUHART WHARF

N 297000

E 1335000

E 1337000



SMALL NAVIGATION IMPROVEMENT PROJECT

BUCKS HARBOR
MACHIASPORT, MAINE

EXISTING FEDERAL NAVIGATION PROJECT

FIGURE 2

EXISTING CONDITIONS

Bucks Harbor encompasses an inner and outer harbor. The inner harbor is primarily intertidal and is used as a clam harvesting resource. This area is also used to moor vessels during severe storm conditions, tide permitting. The commercial fleet open moors in the outer harbor. The harbor is bordered by mainland to the south and west, and by mudflats, mainland and Bar Island to the north. Access to Machias Bay is from the east. Figure 1 shows the location of Bucks Harbor.

Onshore facilities are minimal in the harbor. There is one private dock along the south side of the harbor and a public commercial pier extends into the harbor from Bucks Neck. This town dock, managed by the Bucks Harbor Fisherman's Cooperative, handles the offloading of most of the catch landed by the commercial fishing fleet. Town Selectmen have stated that the facilities and supplies provided at the fish pier are open to all on an equal basis. There is also no discriminatory policy/ordinance regarding assignment of moorings in the Federal anchorage.

The full time commercial fishing fleet operating out of Bucks Harbor numbers 63 vessels. Boats range in length from 22 to 55 feet with drafts from 2.5 to greater than 6 feet.

The primary catch landed at the fish pier is lobster, quahogs, clams, and mussels. Groundfish are also caught by local fishermen, however due to the lack of onshore facilities to handle this catch in Bucks Harbor, these fishermen offload in the Jonesport/Beals, Maine area.

Bucks Harbor experiences a mean tidal range of 12.5 feet, and a spring tidal range of 14.4 feet. Depths in the harbor gradually deepen from about 5 feet at the fish pier to 30 feet at the entrance to Machias Bay.

Subtidal sediment grab samples were collected from ten locations within the existing and proposed anchorages and channel. General identification of species found were performed along with visual description of bottom sediments encountered. The sediments in Bucks outer harbor were classified as primarily silts and clays, with some compacted sands, and some shell fragments were collected. No shellfish were encountered in any of the samples. The inner harbor area was also sampled in both inter and sub-tidal environs. Intertidal sampling revealed bottom sediments consists of silts and clays. A dense population of soft-shelled clams is supported in this area. At low water a shallow channel remains and was found to contain varying densities of eelgrass. The bottom sediments are dense clay, silts, and stones; which also support mussels.

A Corps of Engineers study, completed in 1971, examined the feasibility of providing navigation improvements for the commercial fishing fleet in Bucks Harbor with the proposed improvements determined to be justified. As a consequence a project was adopted in 1972 and constructed in 1974. This authorized Federal navigation project consists of 11 acres of anchorage dredged to 8 feet below mean low water (MLW). The constructed area is approximately 13 acres allowing for a maneuvering fairway for access through the anchorage. At the time of construction about 44 fishing vessels moored in Bucks harbor. No other navigation improvements have been implemented.

Problems, Needs, and Opportunities

As a result of public meetings and responses to questionnaires navigation difficulties affecting the commercial fishing fleet operators were identified. Problems noted were: overcrowding due to a lack of deep water anchorage, no clear access channel as the area originally provided for a fairway has been consumed by moorings due to a great demand, and exposure to hazardous storm conditions entering the harbor from Machias Bay. Due to the overcrowded conditions, and in some areas a lack of adequate depths, storm wind and waves create numerous problems. Boats swing about their moorings oftentimes striking other vessels, or if they are grounded, the waves cause damages to the vessel itself and/or equipment on board.

These navigation problems create damages to vessels and delays to the commercial fleet, thus greatly inhibiting their efficiency of operation and restricting potential growth of the fleet. Therefore, to maintain the solvency of the existing fleet, and any hope for growth of the fishing fleet, as well as investment in improvements of existing facilities, improvements to the existing navigation conditions must be undertaken.

Opportunities are available to alleviate natural problems affecting navigation. Both non-structural and structural measures were examined in this study. A non-structural opportunity of transferring a portion of the fleet to nearby harbors was evaluated. Structural improvements in the form of dredging additional anchorages and access channels were studied. For improved protection from storm conditions, construction of a rubble mound breakwater was also evaluated. More in-depth description of alternatives are presented in the Plans of Improvement section of the main report, and the Economic Analysis appendix.

WITHOUT PROJECT CONDITIONS

The use of Bucks Harbor has been for commercial fishing and will continue to be so. There are no rental slips or onshore facilities servicing recreational boaters in the harbor. Since 1960 the locally based fishing fleet has grown from 5 to over 60 vessels. Due the increase use navigation improvements, in the form of modifications to the existing project, are needed to improve the operating efficiency of the fleet, and hence their competitiveness.

Recently the town of Machiasport has received grants from the state of Maine to perform harbor management, shoreline ordinance review, and facility inventory for potential improvements or new construction. This work is an effort to improve the management of the harbor and its facilities, so as to improve the operating efficiency of the commercial fishing fleet. The existing Federal navigation project was constructed in 1974 and was intended to serve the needs of 44 small commercial fishing boats. The project achieved its objective at the time it was constructed, however, currently 63 vessels moor in the harbor and transient boats also utilize the harbor and its fish pier. The existing navigation features are therefore a limiting factor.

The Town has improved and expanded its shoreline access and support facilities for the commercial fishing operations. Improvement to the existing navigation project is beyond its means. Without navigation improvements there will be little incentive to invest further in significant onshore upgrading. The limited anchorage area creates severely overcrowded conditions resulting in hazardous navigation. Without an improvement to the existing Federal project hazardous conditions and operating inefficiencies will continue. This will stifle growth of the fleet and continue to impose damages to vessels and unnecessary additional operating costs to be borne by commercial fishing operators.

Due to its natural setting, Bucks Harbor contains the potential for growth of the commercial fishing industry and onshore development. The importance of the natural potential for improvements to harbor related development is equalled by the desire of the town of Machiasport to actively seek and fully support growth and improvement goals. Without Federal participation in navigation improvements, there will be less incentive to improve support services.

PLANNING OBJECTIVES AND CONSTRAINTS

Existing navigation conditions affecting commercial fishing operators were identified through public coordination with local officials, harbor users, and responses to questionnaires,. Based on the needs identified, planning objectives for navigation improvements were formulated. The objective of this planning effort was to contribute to national economic development and to be consistent with the Nation's environmental statutes, applicable executive orders and other Federal planning requirements.

The planning objective focussed on the elimination of: the existing overcrowded conditions due to a lack of deep water anchorage, no clear access to moorings or the town Fish Pier, and hazardous situations from exposure to storm conditions.

Planning constraints affecting potential solutions are engineering feasibility, cost of construction and maintenance, and impacts on economics, the environment, and archaeological/historical sites. Through preliminary plan formulation, potential impacts were assessed and potential improvements refined or eliminated. Two constraints affecting plan formulation and implementability identified in this study effort were environmental and cost effectiveness.

As described in the following section, alternative plans as developed were formulated, refined and/or eliminated from further study due to planning constraints encountered. Concerns over potential impacts on existing natural resources in Bucks Inner Harbor, exhorbitant construction costs, and additional operating inefficiencies to be incurred by the fishing fleet, eliminated three alternative navigation improvement plans from further study.

PLAN FORMULATION AND ALTERNATIVE PLANS

Alternative plans were developed to achieve the study objective and address the issues of congestion, lack of a clear thoroughfair to the town Fish Pier, and protection from storm conditions. Five preliminary plans of improvement were formulated.

The first was to provide anchorage area inside the inner harbor. This would serve smaller fishing boats. Dredging inside the inner harbor would provide protection from storm waves, as the inner harbor is protected from the dominant storm wind direction, and relieve congestion in the outer harbor allowing space for an access channel.

The second improvement plan was to construct additional anchorage area in the outer harbor and provide an access channel from the Fish Pier to deep water in the outer harbor.

The third navigation improvement plan would provide the same features as the second plan with the addition of a breakwater east of the anchorage area to provide additional protection from storm conditions.

A fourth plan included the navigation features of the third plan only placing the breakwater at the mouth of Bucks Harbor to provide greater protection for the harbor.

A non-structural plan of transferring a portion of the fleet to nearby harbors in the Jonesport/Beals, Maine area was considered and comprises the fifth alternaive.

Placement of the material to be removed through dredging is proposed to be at the previously used open water site located approximately 2 miles from Bucks Harbor in Machias Bay.

Three improvement alternatives considered were eliminated from further study. Dredging in the inner harbor was determined to be unacceptable primarily due to environmental concerns. Sampling of bottom sediments and visual inspection of the area revealed that most of the proposed site was intertidal. There are also stands of eelgrass, saltmarsh, and portions of the area contains soft-shelled clams that are harvested by local fishermen. The alternative of placing the breakwater at the mouth of the harbor was determined to be too costly due to greater depths in this area than within the outer harbor. Transferring a portion of the fleet was determined to impose approximately 2 hours additional transit time to those displaced boats per fishing trip. This would increase their operating costs without impacting their harvesting incomes. This plan was identified as not achieving study objectives and is not acceptable.

The remaining two alternative navigation plans of improvement providing additional anchorage area, an access channel, and a breakwater, do not yield significant adverse impacts on harbor resources. Coordination with the state of Maine Historic Preservation Commission determined that there would be no impacts from dredging and disposal operations to archaeological or historic sites. (See the Pertinent Correspondence appendix of this report.)

Design of Improvement Alternatives

Information regarding the commercial fishing fleet was obtained at public meetings and through coordination with local officials, harbor users, and responses to questionnaires. Based upon this information, the general physical characteristics of the commercial fishing vessels utilizing Bucks Harbor and the Fish Pier were determined. Information regarding the surrounding natural conditions, design criteria were used to determine the limits and structural requirements of the proposed navigation improvements. The commercial vessels were characterized primarily by required drafts. Additional depth requirements were applied to take into account wave action, vessel squat while underway, and safety clearance under keel. Summing these factors, safe depths needed for the fleet were determined. Boats requiring less than or equal to 6 feet of water at mean low water (MLW) and those needing greater than 6 feet at MLW were divided into two groups.

Area required for safe mooring in a 6 foot MLW and an 8 foot MLW anchorage was calculated using the current practice of single point mooring. Additional anchorage is the first major component of the improvement plans.

The second primary component of the alternative improvement plans is a straight access channel from the town Fish Pier to deep water in the outer harbor. Required depths and physical dimensions of larger vessels were used to determine appropriate channel depth and width limits.

Average and storm wave conditions were developed for the design of the proposed breakwater. Information provided by local sources, and wind and wave data developed for the Corps of Engineers Jonesport, Maine improvement dredging and breakwater navigation project, were incorporated into the Bucks Harbor breakwater design.

For this phase of study, no incremental analysis for project optimization was performed. If this navigation improvement study progresses into the Detailed Project Study phase, additional detailed engineering, environmental, and economic analyses will be performed. Refinement of alternative plans to optimize desired project outputs and their potential impacts will be assessed.

Plans of Improvement

The two alternative navigation improvement plans of dredging, and dredging with a breakwater, are presented as Plan A and Plan B respectively. Plan A provides for an access channel 100 feet wide by 8 feet deep at MLW aligned straight from the town Fish Pier to deep water in the outer harbor. The access channel would consume 0.6 acres of the existing 13 acre 8 foot MLW anchorage. Also included is dredging of 3.3 acres of additional anchorage at 8 feet MLW. Since the channel occupies 0.6 acres of existing anchorage, this area would be added to the 3.3 acre anchorage area for a total additional anchorage area of 3.9 acres and results in a 16.9 acre anchorage at 8 feet MLW.

To accommodate the mooring needs of smaller fishing craft, 1.3 acres of new anchorage area at 6 feet MLW is included. Figure 3 displays the layout of Plan A.

Plan B, as shown in Figure 4, provides the same navigation improvement features as Plan A with the addition of a rubble mound breakwater which would be located east of the anchorage area.

Placement of the material to be removed through dredging would be at the open water site previously used in the construction of the original Bucks Harbor improvement project in 1974. The site is located approximately 2 miles from Bucks Harbor in Machias Bay. Local officials and harbor users have expressed a desire for the use of this site. Figure 5 shows the location of the disposal site.

CORPS OF ENGINEERS

MUD FLATS

BUCKS NECK

COVE (1970)

BAR ISLAND

OUTCROP (1970)

1.3 ACRE ANCHORAGE
6 FEET M.L.W.

ENTRANCE CHANNEL
100 FEET x 8 FEET M.L.W.

OUTER HARBOR

CO-OP FISH PIER

SPRAGUE & LOCK WHARF

LOCAL BERTHING AREA

INNER HARBOR

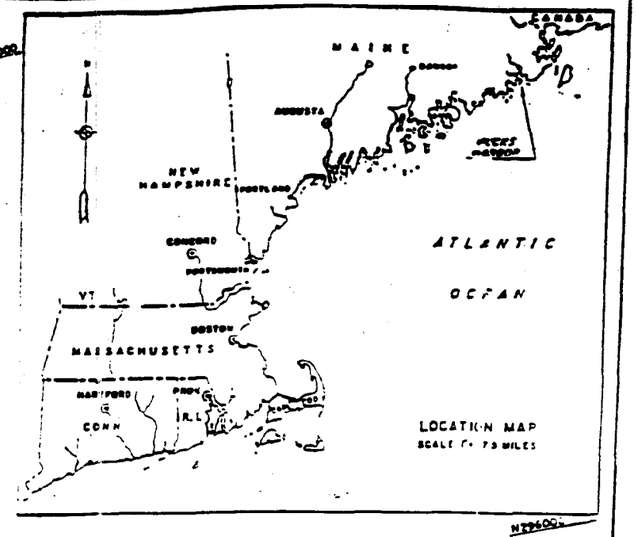
16.9 ACRE ANCHORAGE
8 FEET M.L.W.

LOCK (1970)

BIRCH (1970)

GREENHEAD SHOAL

CORE (1970)



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SMALL NAVIGATION IMPROVEMENT PROJECT
BUCKS HARBOR
MACHIASPORT, MAINE

IMPROVEMENT PLAN A

FIGURE 3

CORPS OF ENGINEERS

MUD FLATS

BAR ISLAND

BUCKS NEC

CO-OP FISH PIER

1.3 ACRE ANCHORAGE
6 FEET M.L.W.

ENTRANCE CHANNEL
100 FEET x 8 FEET M.L.W.

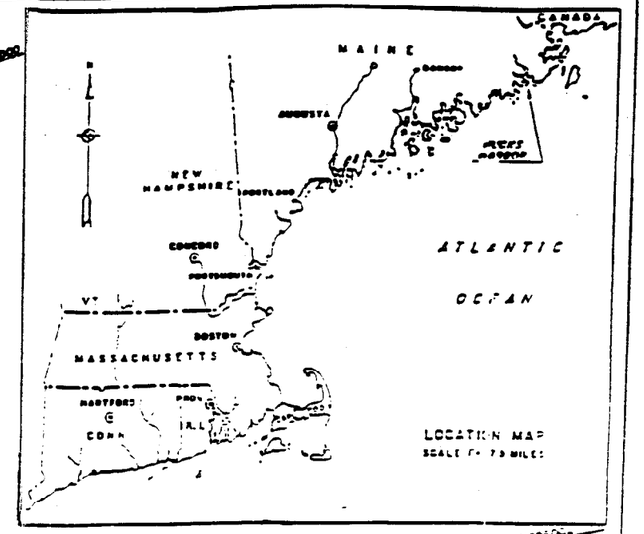
OUTER HARBOR

LOCAL BERTHING AREA

INNER HARBOR

16.9 ACRE ANCHORAGE
8 FEET M.L.W.

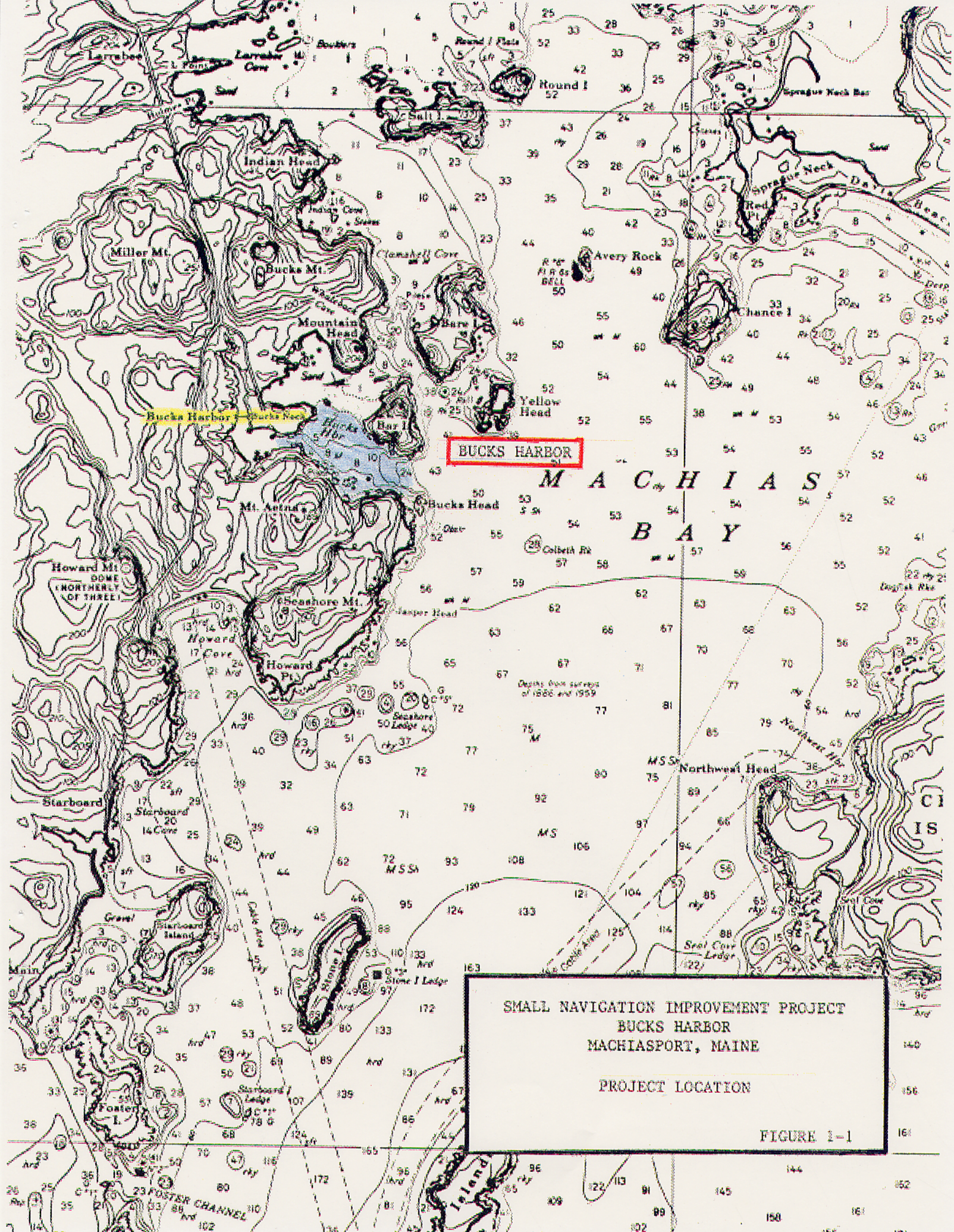
RUBBLE MOUND BREAKWATER



SMALL NAVIGATION IMPROVEMENT PROJECT
BUCKS HARBOR
MACHIASPORT, MAINE

IMPROVEMENT PLAN B

FIGURE 4



SMALL NAVIGATION IMPROVEMENT PROJECT
BUCKS HARBOR
MACHIASPORT, MAINE

PROJECT LOCATION

FIGURE 1-1

COST ESTIMATES

Construction cost estimates developed for the evaluated plans of improvement are at January 1989 price levels. Quantities of material to be removed were estimated from depths as recorded during a hydrographic survey performed in 1987 and using the mean low water datum. Based upon data obtained from local harbor users and existing subsurface explorations it was assumed that no ledge rock would be encountered in construction of the improvement plans.

Construction Costs

Construction of navigation improvements in Plan A would cost $389,000. To fully realize the project objective and desired outputs, non-Federal dredging of berthing area, specifically in front of the town Fish Pier, is required. This was estimated to cost $8,000. For the purpose of marking the access channel, an estimated $16,000 will be required for placement of navigation aids. The construction period is anticipated to be 1 month.

The construction costs of the general navigation features in Plan B are estimated at $3,158,000. The same costs required for dredging the non-Federal berthing area and placement of navigation aids apply to Plan B. As the construction period for Plan B is expected to be 6 months, interest during construction, based on a monthly time-frame, is included in the total investment cost and is estimated to be $60,000.

A detailed breakdown of the improvement's costs is presented in Table 1 and Table 2.

TABLE 1

Plan A
Construction Cost Estimates

Dredging 29,420 cy	
of Ordinary Material at $8.05/cy	$237,000
Contingencies	59,000
Engineering and Design	32,000
Supervision and Administration	61,000
TOTAL FIRST COST	$389,000
Navigation Aids	
4 at $4,000 ea.	16,000
TOTAL COST	$405,000
Dredging of Non-Federal Berthing Area	
739 cy at $8.05/cy + contingencies	7,000
TOTAL INVESTMENT COST	$412,000

TABLE 2

Plan B
Construction Cost Estimates

Dredging 29,420cy of	
Ordinary Material at $8.05/cy	$237,000
Contingencies	59,000
Breakwater	2,138,000
Contingencies	428,000
Engineering and Design	54,000
Supervision and Administration	242,000
TOTAL FIRST COST	$3,158,000
Interest During Construction	60,000
Navigation Aids	
4 at $4,000 ea.	16,000
TOTAL COST	$3,234,000
Dredging of Local Berthing Area	
739cy at $8.05/cy + contingencies	7,000
TOTAL INVESTMENT COST	$3,241,000

Construction Cost Apportionment

Required by the Water Resources Develpment Act of 1986, construction costs are shared with the project's non-Federal sponsor. For commercial navigation improvement projects under 20 feet deep, the contribution requirements are 80 % Federal, and 20 % non-Federal project sponsor, of the First Cost of construction.

Required aids to navigation, i.e. channel markers, are a Federal responsibility. The costs associated with dredging the local berthing area is a non-Federal responsibility. Future maintenance dredging for 100 % commercial navigation improvement projects is a Federal responsibility. Prior to project construction a Local Cooperation Agreement, detailing Federal and non-Federal responsibilities, must be complied with.

Annual Costs

Annual costs for the two alternative plans are derived by multiplying the total investment cost by a Federal interest and amortization rate for the Federal navigation project's economic life of 50 years. Also included in a plan's total annual costs is an assumed annual shoal rate and cost of maintenance dredging, as well as annual maintenance costs for navigation aids.

The assumption has been made that maintenance dredging would be performed when there is an accumulation of two feet of sediments in the project area. Based on this scenario and using an annual shoal rate of 2 % of the material to be removed for the improvement project, maintenance dredging is expected to be required approximately every 14, years or 3 times during the project's economic life of 50 years.

For Plan B, in addition to the above annual costs, an annual maintenance cost for the rubblemound breakwater has been estimated. This cost was based on multiplying the breakwater construction cost by 0.25% or 0.0025.

A breakdown of annualized project costs for Plan A and Plan B are presented in Tables 4 and 5 respectively.

TABLE 4

Plan A
Annual Costs

Interest and Amortization of Investment Cost at 8 7/8 % (50 yrs.) $412,000 x 0.09003		$37,100
Maintenance Dredging of Federal and Local Improvements: 30,139cy x 0.02 x $10.00/cy		6,000
Maintenance of Navigation Aids 4 x $500 ea.		2,000
TOTAL ANNUAL COST		$45,100
	SAY	$45,000

TABLE 5

Plan B
Annual Costs

Interest and Amortization of Investment Cost at 8 7/8 % (50 yrs.) $3,241,000 x 0.09003	$291,800
Maintenance Dredging of Federal and Non-Federal Project: 30,159cy x 0.02 x $10.00/cy	6,000
Maintenance of Breakwater .25 % of Breakwater Cost: .0025 x $2,654,000*	6,600
Maintenance of Navigation Aids 4 x $500 ea.	2,000
TOTAL ANNUAL COST	$306,400

* Breakwater Cost = $2,138,000 + Contingencies + $32,000 (E&D) + $57,000 (S&A) = $2,654,600.

ECONOMIC ASSESSMENT

An economic assessment was performed comparing the with and without project impacts to the commercial fishing fleet. These impacts, along with historical, existing and most probable future, were determined through public meetings with local officials, harbor users, and responses to questionnaires.

The primary navigation problems noted were congestion and tidal delays and damages, the lack of an unobstructed access channel (due to the high demand for deep water mooring area), and protection from storm conditions.

Structural and non-structural solutions were formulated in response to navigation problems experienced in Bucks Harbor. As described in the PLAN FORMULATION AND ALTERNATIVE PLANS section of the main report, two alternative plans were dropped early from further analysis. One plan called for dredging in the inner harbor, another plan proposed transferring a portion of the fleet to the Jonesport/Beals, Maine area, and a third plan of dredging in the outer harbor and placing a breakwater at the mouth of Bucks Harbor. These three plans were found to be unacceptable. Two additional navigation improvement plans calling for dredging in the outer harbor and one to include a breakwater inside the outer harbor, were carried through the engineering feasibility/cost and economic benefits analyses.

The economic analysis examined the effectiveness of the plans of improvement in eliminating the expressed navigation hazards. The economic benefits accrued to the commercial fishing fleet are the difference in operating costs with and without construction of a Federal navigation improvement project.

Benefit Analysis

The benefit analysis examined damages and delays incurred from existing overcrowded conditions, due to a lack of deep water anchorage area, and damages from storm and winter weather experienced in Bucks Harbor. Economic benefits are derived from the elimination or reduction of these navigation problems through implementation of the proposed plans of improvement, i.e. the with and without project condition.

In identifying the economic benefits of a proposed plan, the variable operating costs; specifically labor and fuel charges, and costs to repair damages, are determined. Based on information provided by harbor users, construction of additional anchorage area and a clear access channel, providing adequate mooring space per vessel and depth, would eliminate existing congestion and tidal related delays and damages, and would reduce storm and winter weather damages by 50 % (Plan A). By adding the construction of a breakwater, damages caused by storms and winter weather would be reduced by 90 % (Plan B).

Benefits derived are presented on an annual basis. Annual benefits are used in comparison with annual costs to determine the economic justification of a proposed navigation improvement plan. Table 6 displays a summary of the benefits realized from implementation of the Federal alternative improvements. Appendix 2, Economic Analysis, presents more detailed information on methodologies used, and the benefit categories and calculations.

TABLE 6

Annual Benefits

	Plan A	Plan B
Damage Reduction	$66,000	$115,000
Congestion and Tidal Delays Reduction	$176,000	$176,000
TOTAL ANNUAL BENEFITS	$242,000	$291,000

Economic Justification

To determine a plan's economic justification a comparison of annual benefits and costs is performed. A benefit to cost (B/C) ratio of 1.0 or greater is required for Federal participation in water resources improvement projects. By reviewing the B/C ratio (annual benefits/annual costs) and net benefits (annual benefits - annual costs), a feasible plan is identified.

As shown in Table 7, comparing the economics of the two alternative improvement plans, implementation of Plan A yields a B/C ratio greater than 1.0, and greater net benefits than Plan B.

TABLE 7

Economic Summary

	Plan A	Plan B
Annual Benefits	$242,000	$291,000
Annual Costs	$45,000	$306,000
Net Benefits	$197,000	-$15,000
Benefit to Cost Ratio	5.4	0.9

CONCLUSIONS

This reconnaissance study was accomplished with information obtained from local interests and technical studies performed. This information was used to examine the existing navigation conditions in Bucks Harbor relating to the commercial fishing fleet. Problems, opportunities, and constraints were determined resulting in preliminary plan formulation of navigation improvements. Based on the commercial fleet characteristics, operating procedures, natural conditions, and potential impacts; improvement alternatives were refined.

Two structural plans, Plan A and Plan B were evaluated for construction feasibility and cost; and preliminary economic, environmental, and archaeological/historical impacts.

Plan A provides for anchorage areas of 16.9 acres at 8 feet MLW and 1.3 acres at 6 foot MLW; and in addition, an unobstructed access channel 100 feet wide by 8 feet deep at MLW from the town Fish Pier to deep water in Bucks Outer harbor. Plan B proposes the same navigation features as Plan A with the addition of a rubble mound breakwater 700 feet in length. The proposed disposal site to receive material to be dredged is an open water site previously used in the construction of the original Federal navigation improvement project at Bucks Harbor in 1974. This site is located 2 miles southeast of Bucks Harbor.

Analyses of the evaluated plans did not identify any significant impacts to the environment at this time. No impacts to archaeological/historical resources are expected.

Engineering cost estimates for Plan A is $389,000 and $3,158,000 for Plan B. The total investment cost for plans A and B are $412,000 and $3,241,000, respectively.

Plan A generating significant annual net benefits amounting to $197,000 and a B/C ratio of 5.4. Plan B produced -$15,000 in annual net benefits and a B/C ratio of 0.9.

Evaluation of the navigation improvement plans proposed in this reconnaissance study effort shows that implementation of Plan A yields positive net benefits and B/C ratio. It is concluded that there is at least one likely solution suitable for Corps implementation, and Federal participation in further detailed study phase efforts is therefore justified.

IMPLEMENTATION RESPONSIBILITIES

The following paragraphs indicate project implementation responsibilities identified in this study phase. The following paragraphs on cost apportionment are provided as an example of appropriate construction cost sharing requirements for Federal participation in a small (less than 20 feet deep at MLW) commercial navigation projects. The dollar amounts shown are based on construction cost estimates for Plan A as contained in this report. If this navigation improvement study progresses into the detailed study phase, the recommended plan, associated construction costs, and responsibilities noted herein, will be refined.

Cost Apportionment

Construction of the plan of improvement evaluated in this reconnaissance study will result in commercial navigation benefits only. No joint-use or separable recreational benefits exist.

The Federal and local cost sharing responsibilities for the first cost of construction, as stipulated in the Water Resources Development Act of 1986 (Public Law 99-662), require that the local sponsor contribute at least 20 % of the first cost of construction. At least 10 % of the first cost is to be paid during the construction period, and 10 % may be paid over a period of time up to 30 years. Using Plan A, the total local contribution would be $77,800, or 20 % of the project first cost ($389,000). The remaining share of the first cost, $311,200, represents the Federal contribution. Construction of the non-Federal berthing area is the responsibility of non-Federal project sponsor. The placement of navigation aids is a 100 % Federal cost.

Federal Responsibilities

Federal responsibility includes its share of construction and 100 percent of future maintenance of the designated Federal channel, anchorage area and navigation aids. Federal involvement is contingent upon availability of funds and ceases when the total Federal expenditures reach $4,500,000. This includes all past, current, and future studies, contruction and maintenance costs, conducted under the authority of Section 107 of the River and Harbor Act of 1960, as ameneded.

Non-Federal Responsibilities

In accordance with the provisions of the Water Resources Development Act of 1986, the following is a list of items of local cooperation as required for projects authorized under Section 107. The local sponsor must provide assurance that they intend to meet these items prior to project authorization.

- Assume full responsibility for all non-Federal costs associated with the project. Current statutes require that the non-Federal sponsor provide at least 20 % of the first cost of construction.

- Provide, maintain and operate without cost to the United States, an adequate public landing with provisions for the sale of motor fuel, lubricants and potable water, open and available to use for all on an equal basis.

- Provide, without cost to the United States, all necessary lands easements and rights of way necessary for project construction and subsequent maintenance, and acceptable disposal areas.

- Hold and save the United States free from damages that may result from construction and maintenance of the project.

- Provide and maintain mooring facilities as needed for transient and local vessels as well as necessary roads, parking areas and other needed public use shore facilities open and available to all on an equal basis. Only minimum basic facilities and services are required as part of the project. The actual scope or extent of facilities and services provided over and above the required minimum is a matter of local decision. The manner of financing such facilities and services is a local responsibility.

- Provide a harbor management system that: makes no arbitrary distinction or requirement of any kind in allocating use of the project and ancillary facilities and services to the public except as may be consistent with the purpose for which the project was constructed; does not impose arbitrary fees or arbitrary variations in fees among users. The cost of providing necessary management and ancillary facilities and services may be offset through equitable user fees based on the actual costs incurred. Information pertinent to harbor management, including but not limited to rules and regulations, lists of mooring holders, waiting lists and fee schedules, shall be readility available to the public at all times.

RECOMMENDATION

This reconnaissance study has been determined that implementation of Plan A would result in significant annual net benefits. As this plan of improvement has been determined to be economically justified and locally acceptable, Federal participation in a Detailed Project Study phase is warranted. I recommend this reconnaissance report be approved as a basis to proceed into a Feasibility Cost Sharing Agreement under authority of Section 107 of the River and Harbor Act of 1960, as amended.

Daniel M. Wilson
Division Engineer

Bucks harbor, Machiasport, Maine
Navigation Improvement Study

Reconnaissance Investigation

Appendix 1

Environmental Review

Prepared By
Lawrence R. Oliver

NEW ENGLAND DIVISION
U.S. ARMY CORPS OF ENGINEERS
WALTHAM, MASSACHUSETTS

I. PROJECT DESCRIPTION

The recommended plan of improvement would provide approximately 4 acres of 8 foot anchorage and 4 acres of 6 foot anchorage at mlw, and an 80 foot wide by 8 foot deep access channel running from deep water to the northwest end of the anchorages. Construction of the proposed navigation improvement would require the removal of approximately 30,000 cubic yards of ordinary material. For this study phase, the proposed disposal site for the dredged material is an open water site previously used in the construction of the original navigation project. The alignment of the new anchorage areas and channel considered factors, such as natural deep water areas, exposure to storm conditions and access to the fisherman's Coop pier.

The additional anchorage areas would provide sufficient deep water mooring space for the expanding commercial fishing fleet, reduce damages, congestion related delays and tidal delays currently experienced by the fleet.

II. ENVIRONMENTAL SETTING

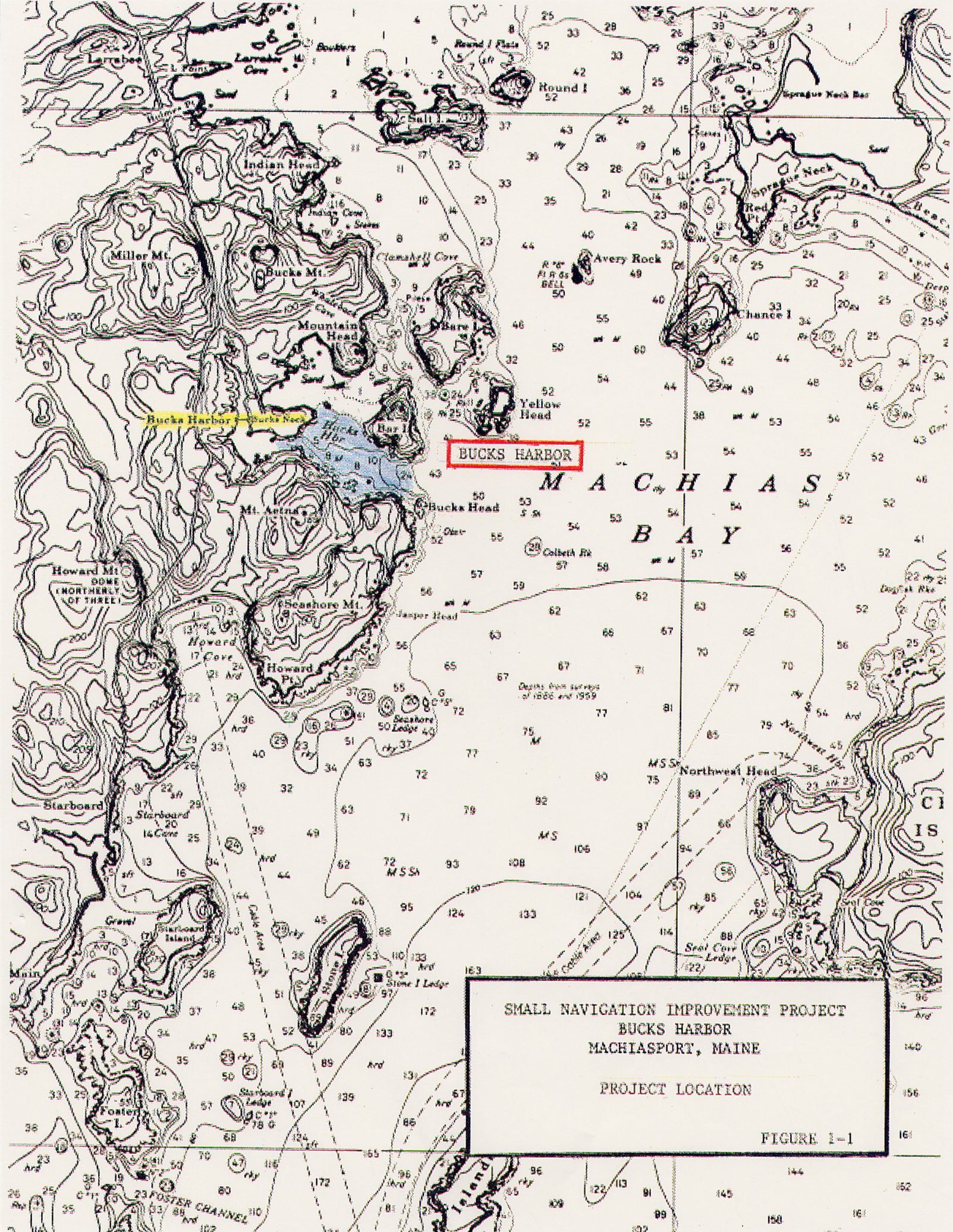
A. Physical Setting

Bucks Harbor is located in the town of Machiasport in north coastal Maine about 70 miles east of Ellsworth (Figure 1). The harbor is divided into an Inner Harbor and Outer Harbor and is formed in a cove of Machias Bay by the mainland, Bucks Neck, and Bar Island leaving openings to the northeast and southeast. It is fed by Machias River, East Machias River and several smaller rivers and streams. Mean tidal range is 12.6 feet and spring tidal range is 14.4 feet with a mean tide level of 6.3 feet (NOAA 1987).

Physical habitats of Bucks Harbor are typical of northeast coastal Maine, including: marine deepwater habitat, aquatic bed, unconsolidated sand and cobble-gravel shorelines, mudflats, and rocky shore of exposed bedrock. Uplands of the Bucks Harbor area support broad leaved deciduous and coniferous forest and wetlands, as well as agricultural land and lawn.

The National Wetlands Inventory (1980) classifies the Outer Harbor and the area north of Bucks Neck within the Marine system including areas within the Subtidal and Intertidal subsystems. According to NWI maps the Estuarine system begins where the inlet to the Inner Harbor swells to form a basin. Only intertidal flats and emergent wetlands are present according to the classification.

A scarp is present facing the southeast on Bucks Neck north of Sprauge and Look Wharf. Along most of the harbor, shoreline shrub or forest vegetation begins approximately 3 to 4 feet in elevation above high water.



SMALL NAVIGATION IMPROVEMENT PROJECT
BUCKS HARBOR
MACHIASPORT, MAINE

PROJECT LOCATION

FIGURE 1-1

B. Water Quality

Waters of Bucks Harbor are classified SB by the Maine Bureau of Water Quality Control. Class SB waters are suitable for water contact recreation and fishing, for the harvesting and propagation of shellfish, and for fish and wildlife habitat.

C. Biological Resources of the Harbor

1. Benthos

Benthic sampling was conducted on 11 September 1987 to generally characterize the benthic environment. Subtidal samples were collected from ten locations in the existing and proposed anchorage and channel, (Figure 2) with a Van Veen grab (0.04m) sampler. The boat was roughly positioned for sample collection by triangulation with shoreline features. The samples were screened through a 1.0 mm sieve on site and preserved in a solution of 10% formalin. Sorting was performed at the NED laboratory. Only general identification was performed for this level of study to characterize the species composition of the dredging area without calculating population parameters. The samples have been archived and are available to determine the level of sampling required for an Environmental Assessment.

During the onsite sorting of samples, general characteristics of the substrate were recorded. Nine of the 10 samples consisted mainly of mud, (e.g. silt and/or clay). The samples closest to the northern edge of the proposed dredging area (samples 2, 5, 8 and 10) contained greater amounts of detritus and shell fragments than those along the southern portion where the existing channel and anchorage are located. Only one sample, the most northerly sample (sample 9), contained sand. This sample consisted of compacted fine sand with a large amount of detritus and urchin, scallop, and mussel shell fragments and living kelp (Laminaria sp.). The substrate in this area was very firm as evidenced by the difficulty in collecting grab samples and the strands of kelp removed by the grab.

Because of the alignment of the existing and proposed anchorages, species composition in the existing anchorage can be used to help predict future species composition in the proposed project area. Organisms collected during the subtidal sampling are listed by sample location in Table 1. Four of the grab samples were analyzed to generate a species list for the existing and proposed channel and anchorages. Stations 1 and 11 are located in the existing Federal project area while Stations 5 and 9 were located in the proposed anchorage area. Species composition varied little throughout the sample locations. No shellfish were found in any of the samples analyzed.

CORPS OF ENGINEERS

MUD FLATS

BAR ISLAND

BUCKS NECK

COVE 1970

OUTCROP 1970

1.3 ACRE ANCHORAGE
6 FEET M.L.W.

ENTRANCE CHANNEL
100 FEET x 8 FEET M.L.W.

CO-OP FISH PIER

SPRAGUE & LOCK WHARF

OUTER HARBOR

LOCAL BERTHING AREA

INNER HARBOR

16.9 ACRE ANCHORAGE
8 FEET M.L.W.

1 2 3 4 5 6 7 8 9 10

LEWIS 1970

BIRCH 1970

GRINDSTONE LEDGE

CORE 1970

MAINE
AUGUSTA
NEW HAMPSHIRE
CONCORD
VT
BOSTON
MASSACHUSETTS
HARTFORD
PROV
CONN
R.I.
ATLANTIC OCEAN
LOCATION MAP
SCALE 1" = 75 MILES

N

SMALL NAVIGATION IMPROVEMENT PROJECT
BUCKS HARBOR
MACHIASPORT, MAINE

LOCATION OF SUBSURFACE
INTERTIDAL GRAB SAMPLES

Figure 1-2

TABLE 1

Benthic species found at three Van Veen grab sample stations in Bucks Harbor, Maine (11 September 1987).

Station 1	Station 5
Eteone heteropoda	Laonice cirrata
Laonice cirrata	Lumbrineris sp.
Nephtys sp.	Nephtys sp.
Ophelia sp.	Ophelia sp.
Pectinaria gouldii	Polydora sp.
Polydora sp.	Prionospio sp.
Prionospio sp.	Scoloplos sp.
Scoloplos sp.	Sternaspis fossor
Sternaspis fossor	Terebellidae
Terebellidae	

Station 9	Station 11
Clymenella sp.	Capitella sp.
Crangon septemspinosa	Eteone hyeteropoda
Eteone heteropoda	Nephtys sp.
Laonice cirrata	Phyllodocidae
Nephtys sp.	Prionospio sp.
Prionospio sp.	Scoloplos sp.
Scoloplos sp.	Sternaspis fossor
Sternaspis fossor	Terebellidae
Terebellidae	

2. Inner Harbor Habitats

The Inner Harbor, that area classified as Estuarine by the NWI, contains mudflats, eelgrass beds, stone cobble shore, dense clay flats and salt marsh. Grid samples collected from the mud and clay flats in the Inner Harbor and for the mudflats just north of Bucks Neck were archived for potential future use. Visual inspection of the samples at the site revealed that except in the area of dense gray clay abutting Bucks Neck the flats support apparently dense populations of soft-shelled clams (Mya arenaria). Local shell fishermen were actively using these sites during the investigation. This information supports Fish and Wildlife Service (Schettig and Schettig 1980) classification of these areas as commercial shellfish (soft clams) beds.

The mudflats and the shallow pool that remains at low tides support varying densities of eelgrass (Zostera marina). The densest eelgrass is present in the pool. The substrate in this pool is hard and stony and also supports mussels (Mytilus edulis). The area north of Bucks Neck also supports eelgrass which becomes progressively denser toward the western shore.

Salt marsh borders the mudflats in locations in the Inner Harbor. Intertidal rocky shores throughout the Bucks Harbor area support dense knotted wrack.

3. Finfish and Lobsters

According to the Fish and Wildlife Service, (Schettig and Schettig 1980) data from near-shore and estuarine surveys indicate that the most common fishes of coastal Maine waters are the herrings (alewife and Atlantic herring), the flounders (winter flounder, American plaice, witch flounder, windowpane and smooth flounder), the codfish (Atlantic cod, haddock, Atlantic tomcod, silver hake, red hake, white hake, American pollock and ocean pout), the sculpins (longhorn sculpin, shorthorn sculpin and sea raven), the skates (little skate, winter skate, and thorny skate), rainbow smelt, wrymouth, rock gunnel, redfish and the American eel. These fish would be expected to use the Bucks Harbor area. Historic herring weirs are shown on Fish and Wildlife Service (1980) maps at the entrance to Bucks Harbor.

Dredging can affect fish populations particularly during spawning. In Maine, peaks in spawning occur during midwinter and summer (Schettig and Schettig 1980). An analysis of impacts to fisheries must be prepared during the Environmental Assessment phase with particular attention to dredging windows.

Lobsters (Homarus americanus) have been noted as a concern by Maine DMR. In Maine, lobsters molt in near-shore waters in early summer or fall and mate shortly afterwards. Eggs are released and carried on appendages on the underside of the females between May and July. The eggs hatch the following summer in a planktonic form that lasts 5 to 6 weeks (Schettig and Schettig 1980). Because of the spawning and molting activity of lobsters in shallow waters, this time of year (summer) should be avoided as requested by Maine DMR.

4. Wildlife

a. Waterfowl

The habitat of Bucks Harbor is typical of northeastern Maine which is described by the U.S. Fish and Wildlife Service (Schettig and Schettig 1980) as excellent habitat for all migrating and wintering waterfowl species of Maine. The high quality of the habitat is due in large part to the large tidal range which exposes extensive mudflats as in the Inner Harbor. This supplies excellent habitat for dabbler ducks, particularly black ducks which have not experienced a population decline in the Machias area in recent years as have populations to the southwest (Schettig and Schettig 1980). Four black ducks were observed in Bucks Harbor during the 31 March 1987 and 11 September 1987 site investigations. Black duck and other dabbling duck feeding habitat in Bucks Harbor is located primarily in the shallower areas of the Inner Harbor and north of Bucks Neck. The Fish and Wildlife Service (Schettig and Schettig 1980) classifies the Inner Harbor and the area north of Bucks Neck as Tidal Flats Important to Waterfowl.

The deeper water of the Outer Harbor provides habitat for diving ducks such as bufflehead, goldeneye and scoters. Scaup and wintering eiders are not common (Schettig and Schettig 1980).

b. Shorebirds

Coastal Maine is most important for shorebirds as a feeding and resting area during migration. In addition, the piping plover and spotted sandpiper breed along the coast and the purple sandpiper is a winter resident. Shorebirds feed in invertebrates on intertidal mudflats and roost on sand, gravel beaches, spits, wetlands or near shore ledges (Schettig and Schettig 1980). Changes in intertidal habitat can affect shorebirds.

D. Disposal Site Alternatives

Disposal site alternatives for dredging projects include upland disposal, beach nourishment, intertidal or shallow water disposal with possible habitat development, and ocean disposal. At this time the only disposal site specified for consideration is that used for the original Federal project, located approximately 2 miles from Bucks harbor in Machias Bay (see Figure 1-3).

1. Upland Disposal

No potential upland disposal sites have been identified at this time.

2. Beach Nourishment

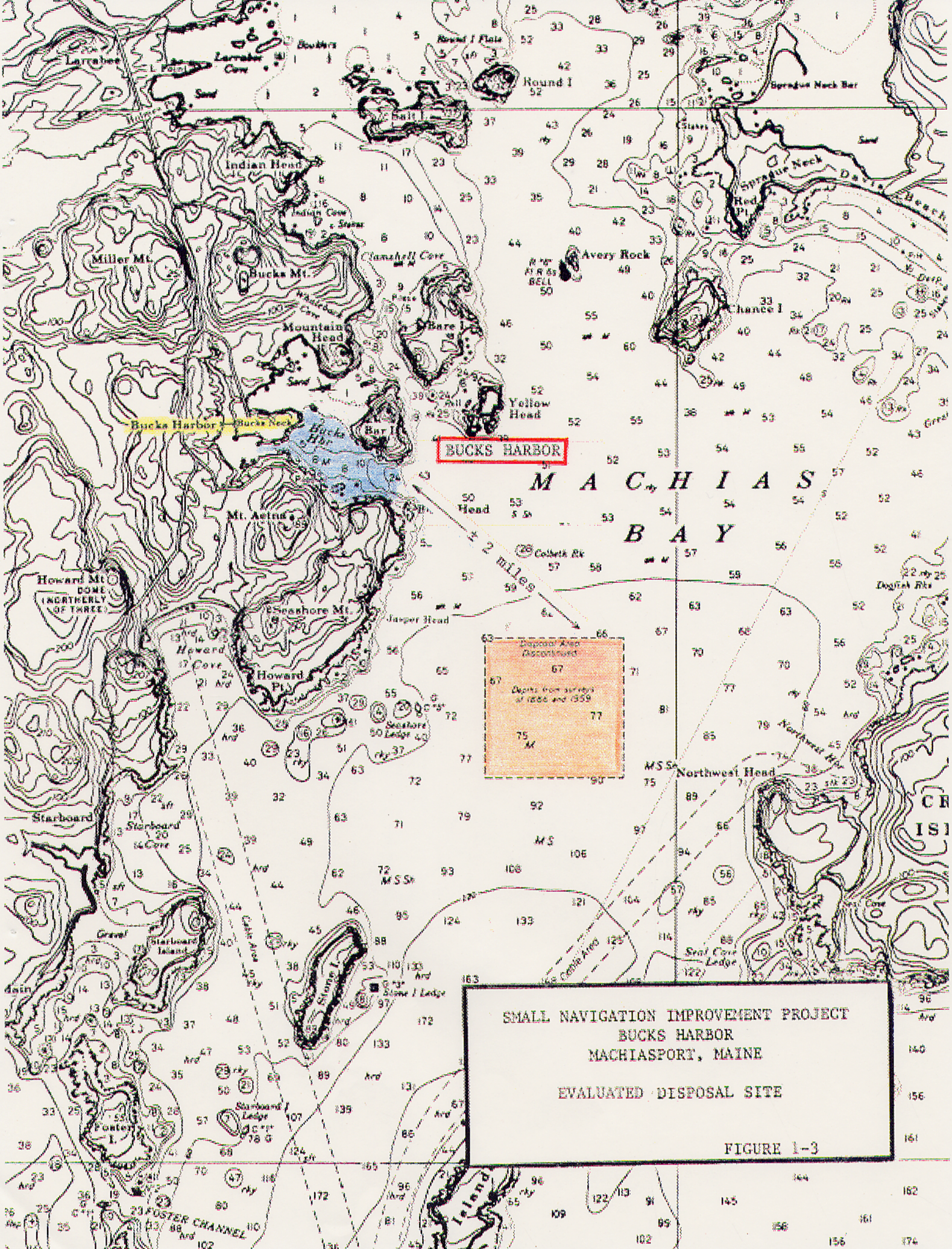
Beach nourishment does not appear to be a viable alternative because of the physiography of the area and the apparent fineness of the material.

3. Habitat Development

The mudflats and shallow waters of the Inner Harbor and surrounding bays and coves support soft shelled clams and eelgrass beds and appear to be very productive. Disposal in one of these areas would present severe environmental constraints.

4. Ocean Disposal

The nearest EPA approved ocean disposal site to Bucks Harbor is the Rockland site which is over 50 miles from the project area. The material from the 1974 dredging project in Bucks Harbor was disposed of in Machiasport Bay. This site is located directly east of Stone Island, north of Libby Islands, and southwest of Cross Island, according to a U.S. Fish and Wildlife Service map (Schettig and Schettig 1980). The local harbor master felt that the site was closer to Cross Island. According to the harbor master and local fishermen disposal at this site resulted in the elimination of the underlying quahog (Mercenaria mercenaria) fishery. It is believed that the lobster habitat at the


BUCKS HARBOR
MACHIAS BAY
Bucks Harbor
Bucks Neck
Indian Head
Miller Mt.
Bucks Mt.
Mountain Head
Yellow Head
Avery Rock
Chance I
Round I
Salt I
Spruce Neck
Spruce Neck Bar
Red Pt.
Mt. Aetna
Howard Mt.
Howard Pt.
Seashore Mt.
Jaggar Head
Northwest Head
Starboard
Starboard I.
Stone I.
Foster I.
Foster Channel
2 miles
Deposit Area Recommended
Depths from surveys of 1966 and 1959
SMALL NAVIGATION IMPROVEMENT PROJECT
BUCKS HARBOR
MACHIASPORT, MAINE
EVALUATED DISPOSAL SITE
FIGURE 1-3

site has improved since the disposal. A thourough analysis of the marine community will be required during the DPS phase to describe the disposal site community and impacts of disposal. It is not reasonable, at this time, to assume that since the site was previously used for disposal, impacts of subsequent disposals would be minimal.

E. Endangered and Threatened Species

Preliminary endangered species coordination with the U.S. Fish and Wildlife Service and National Marine Fisheries Service indicates that nesting bald eagles, fall migrant peregrine flacons (Joseph, USFWS pers. com. 22 July 1987), humpback and fin whales and possibly right whales (Beach, NMFS pers. com. 25 January 1988) are present in the project area. Whales are mainly a concern in evaluating disposal sites. Other unidentified endangered or threatened species may be present since only preliminary coordination has been completed at this time. Depending on the potential impacts which will be further evaluated in the next study phase a formal Section 7 consultation could be required.

Harbor seals may also be present in the project area (Beach, NMFS pers. com. 25 January 1988). If a major haulout site is present in an area subject to disturbance by the proposed project, which appears unlikely at this time, it will be necessary to comply with the Marine Mammal Protection Act.

F. Archaeological and Historical Resources

Machiasport, Maine was settled by Europeans in 1765. The area was important for its lumber and saw-mills during the 18th and 19th centuries. When the timber in the area was exhausted, the residents turned to fishing for their major source of income.

Fort Machias, now known as Fort O'Brien, was an active fort from 1783 to 1812 when it was taken over by the British. The breastworks still remain, overlooking Machias Bay.

During its heyday as a lumber town, in the late 18th and early 19th century, ships loaded the timber at wharves lining the banks of the Machias River in Machiasport. Several structures from this period survive, notably the Gates House, which is now the Machiasport Historical Society (Ruth Page: Personal Communication).

There is evidence of prehistoric use of the area. On the east side of the port, local residents have located shell middens, projectile points, and other artifacts (Dana Urquhart: Personal Communication).

There are ten known shipwrecks near Machiasport, Maine, including one in the mudflats north of the existing project area. However, none of these known wrecks or any other known historic or archaeological resources are within the impact area of the proposed Navigation Improvement project in Bucks Harbor.

The evaluated location for improvement dredging presented in this report will have no effect upon any structure or site of historic, architectural, or archaeological significance, as defined by the National Historic Preservation Act of 1966. The Maine Historic Preservation Commission is expected to concur with this finding (see Appendix 3, Pertinent Correspondence).

A decision has not yet been made on a disposal site for the dredged materials. Additional research and coordination must be made for the area when a disposal site has been selected.

III. COORDINATION

The following people were contacted during the development of the Preliminary Reconnaissance Phase Environmental Report:

Mr. Ronald Joseph, U.S. Fish and Wildlife Service;
Mr. Walter Foster, Maine Department of Marine Resources.

The following people were contacted and informed of the site visit and invited to attend (none attended):

Mr. Ronald Joseph, U.S. Fish and Wildlife Service;
Mr. Douglas Beach, National Marine Fisheries Service;
Mr. Malcom Richards, Maine Department of Marine Resources.

During preparation of this report, Mr. Douglas Beach of the National Marine Fisheries Service was contacted to collect endangered and threatened species information. Ms. Katrina Van Duesen of the Maine State Planning Office, the designated State contact for the Corps of Engineers projects in the coastal zone, was asked to provide environmental input. This information is forthcoming.

The following people provided information on archaeological and historic resources:

Ruth Page, Machiasport Historical Society;
Dana Urquhart, Harbor Commission.

IV. MAJOR ISSUES

At this time the major issues appear to be as shown in the following list.

1. Avoid impacts to lobster by scheduling work when lobsters are not in shallow waters.

2. Evaluate the effects of deepening the harbor on wave induced erosion of the scarp on Bucks Neck and nearby mudflats.

3. Evaluate the effects of dredging associated turbidity and sedimentation on the productive habitats of the Inner Harbor.

4. Locate a suitable disposal site and evaluate impacts of disposal of the dredged material. This evaluation will need to include endangered species coordination.

5. Evaluate the potential for contaminants from the Outer Harbor to migrate to the Inner Harbor with increased use.

6. Evaluate dredging impacts to the benthic community, fisheries and wildlife with an evaluation of dredging windows.

V. REFERENCES

Berman, Bruce. 1972. Encyclopedia of American Shipwrecks. Mariners Press Incorporated, Boston.

Maine Department of Environmental Protection, Bureau of Water Quality Control September 1987. Classification of Surface Waters, Maine Revised Statutes Annotated, Title 38, Chapter 3. Augusta, Maine.

Schettig, S.I. and P.A. Schettig. 1980. An Ecological Characterization of Coastal Maine. U.S. Fish and Wildlife Service, Northeast Region, Newton Corner, Massachusetts.

VI. ESTIMATES OF ADDITIONAL WORK FOR THE DPS/FEASIBILITY STUDY PHASE

A. Field and Laboratory Work

1. Analyze existing samples
2. Statistical analysis to determine sampling level
3. Benthic sampling
4. Analyze additional benthic samples
5. Lobster survey

B. Coordination with Agencies

C. In-House Project Coordination

D. Prepare Environmental Assessment and FONSI

1. Analysis of information and impacts
2. Report preparation

E. Prepare 404(b)(1) Evaluation

F. Prepare Maine CZM Consistency Determination and Water Quality Certification Application

Bucks Harbor, Machiasport, Maine
Small Navigation Improvement Study

Reconnaissance Investigation

Appendix 2

Economic Analysis

Marianne Matheny
Regional Economist

November 1988

TABLE OF CONTENTS

LIST OF TABLES

Introduction

The purpose of this appendix is to estimate economic benefits associated with proposed improvements to Bucks Harbor, Machiasport, Maine. The analysis will measure the economic feasibility of each plan by comparing benefits developed in the analysis to costs of each alternative.

Methodology

The economic analysis is based on procedures accepted by the U.S. Army Corps of Engineers for evaluating the benefits and costs of improvement plans for small boat harbors and commercial fishing, and their contribution to National Economic Development (NED). These procedures have been established in the following document:

- U.S. Army Corps of Engineers Planning Guidance Notebook, Regulation No. ER 1105-2-40, Appendix A, Section IX, NED Benefit Evaluation Procedures: Commercial Fishing

The economic analysis is accomplished by first determining economic justification of each plan under consideration. Average annual benefits to national economic devleopments are compared to the annual costs of the project over its economic life, which in this case is 50 years. Benefits and costs are made comparable by conversion to the Federal interest rate employed in the evaluation of Federal water resources plans. During fiscal year 1989 this interest rate is 8 7/8%. All dollar values are expressed in September 1988 prices. A plan is considered economically feasible and eligible for Federal participation if annual benefits equal or exceed annual costs.

Net benefits (benefits minus costs) are calculated for each alternative plan to determine the plan that maximizes net benefits. This plan is considered to be the one which allocates Federal resources in the most efficient manner.

Existing Conditions and Problems

The town of Machiasport is located in northern coastal Maine approximately 2 1/2 miles below the town of Machias and the mouth of the Machias River. It is in Washington county approximately 70 miles east of Ellsworth, and 25 miles west of Lubec, Maine and can be reached via U.S. Rt. 1.

Bucks Harbor is 8 miles south of Machiasport on the west side of Machias Bay. The Corps of Engineers completed a navigation improvement project in Bucks Harbor in July 1974. The project consists of eleven acres of anchorage eight feet deep, extending from the southerly side of Bucks Neck about 1,450 ft. along the westerly side of the harbor, southeasterly toward Bucks Head. The total cost of the project was $277,420. There has been no maintenance dredging since project construction.

Lobster fishing, quahog and mussel dredging are the main fishing activities in the harbor. A significant number of vessels also fish scallops, but these are all landed in Jonesport rather than in Bucks Harbor. Lobsters are landed in Bucks Harbor and are sold by one of two companies in the town: Bucks Harbor Lobster Cooperative or Bucks Harbor Lobster Company. Bucks Harbor Lobster Company has a lobster pound with a capacity of 35,000 lbs. of lobster. One clam dealer, Bucks Harbor Seafood, buys and shucks a large proportion of the clams caught in the area.

All other fish species caught by Bucks Harbor based vessels including all groundfish are landed in the Jonesport-Beals area. The facilities in Bucks Harbor are too limited and the water near the town dock is too shallow to accomodate the offloading of groundfish and scallops. In addition, there are no marketing companies present in the town to sell these species. Table I shows lobster landings in Washington county from January 1987 thru October 1987 and the latest statistics available from the Department of Marine Resources in Maine. Table II presents landings of the several chief species in Washington County from 1975-1985.

Table I

Lobster Landings in Pounds
Washington County

Year		$/lbs.
10/87	470,357	$2.57
9/87	756,707	2.42
8/87	518,649	2.72
7/87	109,336	2.86
6/87	42,184	3.46
5/87	66,344	3.55
4/87	14,191	4.69
3/87	2,301	4.13
2/87	4,467	3.69
1/87	11,322	3.51
	Cummulative Total	Ave. Price/lb.
	1,995,876	$2.73

Cummulative Totals through August 1986

9/86	1,676,712	$2.56
10/85	1,536,195	
10/84	1,541,274	
10/83	1,583,917	
10/82	1,716,927	

Table II

Washington County Landings 1975-1985
Selected Species

Pounds and Value

	Soft Clams		Lobster		Sea Scallops		Sea Mussels	
	lbs.	Value	lbs.	Value	lbs.	Value	lbs.	Value
1985	2,057,000	$5,207,400	1,706,900	$3,802,041	439,900	$2,446,348	243,700	$82,287
1984	2,394,800	$5,262,659	1,744,300	$4,450,858	742,300	$4,490,116	551,700	$184,035
1983	1,545,000	$2,708,534	2,102,100	$4,978,461	454,600	$2,518,913	1,252,100	$395,861
1982	1,646,200	$2,506,148	2,308,100	$5,168,765	191,000	$761,688	1,073,300	$300,589
1981	2,085,000	$3,399,314	2,318,800	$5,170,666	505,000	$2,137,309	1,890,800	$507,315
1980	2,902,000	$4,314,741	2,113,300	$4,002,627	271,100	1,074,274	1,119,200	$255,826
1979	2,718,000	$3,942,674	2,394,200	$4,432,780	128,400	$425,187	743,100	$185,291
1978	2,566,900	$3,297,346	1,935,700	$3,486,567	106,800	$266,400	506,200	$117,547
1977	3,661,200	$4,333,159	2,020,400	$3,579,839	123,100	$237,195	76,100	$25,157
1976	2,830,100	$2,833,942	2,488,600	$3,873,606	102,300	$217,585	17,000	$5,775
1975	2,675,200	$2,411,356	1,899,600	$3,191,874	195,200	$313,036	22,400	$7,355

There are currently 63 commercial vessels operating out of Bucks Harbor ranging in length from 23 foot lobster boats to 55 foot draggers and quahog dredgers. Quahog dredging has become an important fishing activity in Bucks Harbor since 1980. Most of the newer larger boats in Bucks Harbor have been purchased exclusively for this purpose. Many of the larger boats go to Jonesport for fuel, water and other supplies because the town cooperative dock at Bucks is very limited. Also there are shallow areas close to the dock that make it impossible for larger boats to approach during lower tidal stages. Many sections of the anchorage are very shallow and vessels are forced to crowd together in the middle of the anchorage, as there is not enough water in the outer sections of the anchorage during low tide. There is a greater risk of grounding to those vessels furthest from the center of the anchorage, because of the severe chop in the harbor. This creates another problem however, because of the crowding in the center of the anchorage, there is no clear entrance channel to provide a safe and convenient access to anchorage space or the cooperative dock. Many fishing vessels scrape or bang one another when trying to get into the harbor.

Local fishermen have also asked the Corps of Engineers to study a plan combining an increased anchorage with a breakwater at the mouth of the harbor to stop the severe sea swell the harbor is plagued with during storms. These problems add to vessel damage and operating costs.

Without Project Conditions

In the absence of a plan to improve Bucks Harbor the following conditions are expected to prevail:

Fishermen will be discouraged from purchasing larger boats because of the frequent damage (and high insurance). These larger boats would be preferable because they would be safer and more seaworthy in the winter and because they would allow more diversification of fishing operations.

Operating costs will continue to increase due to grounding damages and tidal delays.

Many fishermen will be encouraged to fish out of other ports such as Jonesport, which provides greater winter shelter. While this will decrease damages it will also add time to the fishermens day. Fishermen who live in Bucks Harbor will have to drive to and from Jonesport which is a 45 minute trip one way. This will add 1 1/2 hours to their workday at a minimum.

The town of Machiasport is studying a series of improvements to the Co-op dock with greater offloading, water fuel and storage capabilities. This will help reduce some operating expenses for fishermen who must offload in Jonesport. If the harbor is not improved there will be little incentive for the town to improve their dock.

Improvement Plans and Costs

The major navigation difficulties expressed by local fishermen concentrate on congestion and groundings damages and delays, the lack of a unobstructed entrance channel (due to the high demand for deep water mooring area), and the desire for protection from storm conditions.

To reduce or eliminate the noted navigation problems, structural and non-structural solutions were developed and analyzed. A non-structural plan of transferring commercial vessels to other ports such as Jonesport was considered. Transferring a portion of the fleet would only help to reduce some congestion related problems however, it would also increase the operating costs to those displaced fishermen. Fuel and labor costs would increase and 1 1/2 to 2 hours would be added to their work day. This plan was not locally acceptable.

Two structural solutions were developed. These plans were analyzed for construction and maintenance costs; economic benefits; environmental, social, and cultural acceptability. The alternative navigation improvement plans address all the navigation difficulties expressed above. Plan A calls for the construction of an additional 3.3 acres of anchorage dredged to a depth of 8 feet at mean low water (MLW), 1.3 acres of additional anchorage at a depth of 6 feet MLW, and a 100-foot wide by 8 feet deep at MLW entrance channel extending straight from deep water in the outer harbor to the CO-OP fish pier. Plan B provides for the same increased anchorage area and entrance channel as Plan A, only with storm protection provided by a 700 foot long rubble mound breakwater. The location of the breakwater would be southeast of the existing Federal anchorage. Figures 3 and 4 of the main report shows the limits of the proposed navigation plans of improvement. Disposal of the material to be removed in construction of the proposed improvement plans is at an open water site previously used in construction of the original Federal navigation improvement project in 1974. This proposed disposal site is located about 2 miles east of Bucks Harbor in Machias Bay.

Construction costs for both proposed plans of improvement, including aids to navigation and interest during construction, were developed. These total investment costs were then annualized over a 50 year project life with annual project maintenance charges added.

Table III shows the total investment costs for the two plans and their total annual charges. These annual charges are to be countered by the annual economic benefits derived through plan implementation. A proposed plan of improvement is considered economically justified when the annual benefits equal or exceed the annual costs of the project.

TABLE III

TOTAL INVESTMENT COSTS AND ANNUAL CHARGES
OF PROPOSED PLANS OF IMPROVEMENT

	Investment Cost	Annual Charges
Plan A	$412,000	$45,000
Plan B	$3,241,000	$306,000

With Project Conditions

Implementation of navigation improvements in Bucks Harbor would increase the operating efficiency of the commercial fishing fleet. Evaluated improvements were designed to reduce or eliminate groundings, congestion, and storm related damages and delays to the fishing vessels by providing greater mooring space per boat to allow for a full swing about the mooring, and preventing damages from storms while grounded.

Navigation improvements could encourage commercial fishing operators to invest in purchasing larger craft, which would provide a safer, more efficient operation and a greater potential for diversification.

Fishermen would not feel forced to move their moorings to Jonesport (the closest capable working harbor), which would reduce damages to thier boats, but would add to their operating costs due to increased transit distances.

The town of Machiasport would be encouraged to pursue their efforts of improving the onshore facilities available to the fishing fleet. This would provide for a more cost effective operation with greater potential for viability, diversification, and expansion.

Benefit Analysis

Information for the calculation of benefits was obtained through data collected from local fishermen. Information was collected from a sample of 23 commercial fishing vessel owners out of the 63 working out of Bucks Harbor. The harbormaster did not have an official list of all the boats and dimensions so this sample served as a proxy for such a list. Information about tidal delays, vessel damages and increased operating costs came directly from these fishermen. Responses from this sample were extrapolated to represent the total fleet. Table IV provides a breakdown of the vessels used in this analysis by size.

Benefits are the difference between operating costs and damages without a project and those with a project. Assumptions used in the analysis are based on information provided by fishermen in Bucks Harbor. Their responses are considered to be representative of the fleet as a whole in terms of fleet characteristics.

- The winter fleet is comprised of 58 vessels while the summer fleet is comprised of 63 vessels.

- Boats having a draft of less than 3 feet experience no tidal delay and comprise 32% of the total fleet. Boats with between 3 and 4.5 feet of draft experience a 2 hour tidal delay and make up 50% of the total fleet. Boats with a draft of 4.5 feet or greater experience between 2 and 3 hours of tidal delay and make up 18% of the fleet.

- The labor time and fuel consumption calculations factor in round trips as a consideration because the commercial fishermen's work day is longer. Due to the existing conditions in Bukcs Harbor, fishermen come in early to fuel up and must return late to get in.

- Vessels having a draft of between 3 and 4.5 feet consume an average of 4 gallons of fuel per hour while vessels with a draft of 4.5' or greater burn an average of 5.4 gallons per hour.

- The opportunity cost of labor was represented by the hourly wage rate for production workers in manufaccturing for state wide Maine. This wage rate was $9.16 for September 1988.

Table IV

Bucks Harbor - Boats represented in questionaire sample

Length (ft.)	Beam (ft.)	Draft (ft.)	Species Fished	Crew Size	Gallon Fuel Burned/Hr.
22	8.5	2.5	Lobster	1	1
23	8.5	2.5	Lobster	1	1
26.5	10.5	3	Lobster	1	
31.75	12	4.5	Lobs/Sclps/Quhgs	2	3.5
32	10	3	Lobster	1	2
32		3.5	Lobster	1	1.7
32	11	3.5	Lobs/Sclps/Quhgs	1	4
33	9.5		Lobster/Scallops	1	
34	10	4.5	Lobster		
35	12.5	3	Lobster	2	2
35	13.5	3	Lobster/Quahogs	2	4
36	12	3	Lobster	2	2
36	12	3.5	Lobster/Scallops	2	3
36	12	5	Quahogs/Scallops	2	4
38	13.5	6	Quahogs/Scallops	3	3
38	12	3	Lobster/Quahogs	2	4
40	14	4	Quhgs/Sclps/Lobs Groundfish	2	10
40	13.5	4.5	Lobs/Quhgs/Scllps Sea Urchins/Halibut	2	5
40	13.5	4.5	Qhgs/Lobs/Scllps	2	3
40	13	4	Quahogs	2	3
45	15	6	Quahogs	3	5
45	15	6	Sclp/Qhg/Grndfish	3	4

Damages

Calculations

Damages due to congestion. - Summer Fleet
Twenty-five percent of the fleet experiences between $100-$500 (average $300) dollars in damages when winding their way through boats in the anchorage. These damages would be eliminated by 100% if a channel were constructed.

No. of Affected Boats = .25 x 63 = 15.75 or 16 boats
$300 x 16 boats = $4,800

Damages due to storms. - Summer Fleet
Fifteen percent of the boats receive damages from grounding in storms inflicting repair costs ranging from $500-$1,000 annually. A larger anchorage would eliminate 50% of these damages and a breakwater would eliminate 90%.

No. of affected boats = .15 x 63 = 9.5 = 10
$750 x 10 boats = $7,500

Damages to vessels in winter weather
Much of the additional damages to vessels occurs during the winter when weather is harsh and wave action causes groundings, collisions, and in some cases sinking of boats in the harbor. Approximately 40% of the boats are affected by these winter damages. Damages average approximately $5,000 per vessel, annually.

58 winter boats = 58 x .4 = 23.2 or 23 boats affected per year.
$5,000 x 23 vessels = $115,000

A larger anchorage would help to eliminate 50% of these damages while a breakwater would eliminate 90%.

Tidal and Congestion Delays

Tidal delays are quite frequent in Bucks Harbor because of harbor conditions. Vessels are affected in two ways: (1) They often experience delays getting out of their anchoragae to go to their fishing grounds and (2) many 35' and larger boats have difficulty getting close to the dock to fuel up. These fishermen must either come in 2-3 hours early or go to Jonesport to get fuel (which adds 2 hours to their day). Of the 22 fishermen polled 15 said that they are affected by these conditions (68%). Only the smaller boats, drafting less than 3 feet were unaffected.

The average delay reported was five times per month and ranges from 60 minutes to 3 hours depending on the size of the boat and where it was anchored. A harbor improvement project is expected to reduce these delays by 100%.

Offloading delays

Some groundfish draggers must travel to Jonesport to offload their catch. The main reason for offloading catch at Jonesport is because Bucks Harbor does not have adequate dock facilities to service their needs. There are also no wholesalers for groundfish in the immediate area. No benefits were calculated in this category because the alternatives proposed here would have no effect on transferring offloading activities back to Bucks Harbor.

Benefit Calculations

Calculations estimating savings to commercial fishermen in Bucks Harbor with a plan of improvement follow.

Congestion delays (May - Sept)

Congestion causes delays of approximately 15 minutes when boats enter or leave the harbor from the far sections of the anchorage. Approximately 35% of the vessels are affected, (8 of 22 polled) during the recreational season.

.35	x	63	x	.25	x	130	x	2	=	1,433	hours of delay
% of fleet		fleet		delay % of 1 Hr.		trips		(round trip)			

Labor Costs = 1,433 hours x $9.16 wage rate x 2 crew = $26,253

Fuel Costs (Boats w/drafts of 3 - 4.5 feet)

1,433 hours	x	.75	x	4 gal/hr	x	$0.98	=	$4,213
		% of affected fleet		fuel consumption		fuel cost/gal.		

Fuel Costs (Boats w/drafts of 4.5 feet or greater)

1,433 hours	x	.25	x	5.4 gal/hr	x	$0.98	=	$1,896
		% of affected		fuel consumption		fuel cost/gal.		

Tidal delays - Fuel Consumption

Winter fleet

Boats with drafts of 3 - 4.5 feet.

58 x .5 x 5 x 6 x 4 x $0.98 x 2 = $6,821

total vessels	% vessels in this class	tidal delays per month	months	gallons per hour	cost/ gal.	hrs. of delay

Boats with drafts of 4.5 feet or greater.

58 x .18 x 5 x 6 x 5.4 x $0.98 x 2.5 = $4,144

total vessels	% vessels in this class	tidal delays per month	months	gallons per hour	cost/ gal.	hrs. of delay

Summer fleet

Boats with drafts of 3 - 4.5 feet.

63 x .5 x 5 x 6 x 4 x .98 x 2 = $7,409

total vessels	% in this class	tidal delays per month	months	gallons per hour	fuel cost per gallon	hrs. of delay

Boats with drafts of 4.5 feet and greater.

63 x .18 x 5 x 6 x 5.4 x .98 x 2.5 = $4,501

* Fuel consumption calculation does not factor in round trips.

Tidal Delays = Increased oeprating costs

Winter Fleet - Labor time lost

Boats with drafts of 3 - 4.5 feet

58 x .5 x 5 x 6 x 2 x 2 x $9.16 = $31,878

total boats	% in this class	days	months	hour delay	crew avg.	wage

Boats with drafts of 4.5 feet or greater

58 x .18 x 5 x 6 x 2.5* x 3 x $9.16 = $21,517

hours delayed	crew avg.	wage

Summer fleet - Labor time lost

Boats with drafts of 3 - 4.5 feet

63	x	.5	x	5	x	6	x	2	x	2	x	$9.16	=	$34,625
total boats		% in this class		tidal delays per mo.		months		hours		crew		wage		

Boats with drafts of 4.5 feet or greater

63	x	.18	x	5	x	6	2.5* hours delayed	x	3 crew	x	$9.16	=	$23,372

*Average tidal delay based on responses given in questionaires - some vessels experience 2 hour delays while others experience 3 hour delays.

Table V

Increased Operating Expenses
From Congestion and Tidal Delays

Total Increased Labor time		
Winter Fleet		
Boat drafts: 3 - 4.5		$31,878
4.5 and >		21,517
Summer Fleet		
Boats drafts: 3 - 4.5		34,625
4.5 and >		23,372
		$111,392
	rounded to	$111,000
Total Increased Fuel Consumption		
Winter Fleet		
Boat drafts: 3 - 4.5′		$6,821
4.5′ and >		4,144
Summer Fleet		
Boat drafts: 3 - 4.5′		7,409
4.5′ and >		4,501
		$22,875
	rounded to	$23,000
Congestion Delays		
Labor Costs:		$26,253
Fuel Consumption:		
Boat drafts: 3 - 4.5 feet		4,213
4.5 feet and >		1,896
		$32,362
	rounded to	$32,000

TABLE VI

Additional Operating Expenses
Commercial Fishing
Without Plan vs. With Plan

	Increased Operating Costs Without Project	Plan A Anchorage & Channel	Plan B Breakwater, Anchorage & Channel
1. Congestion Damage	$5,000	$0	$0
2. Storm Damage	8,000	4,000	1,000
3. Winter Damage	115,000	58,000	12,000
Congestion Delays			
Labortime	$26,000	$0	$0
Fuel	6,000		
Tidal Delays/Labortime	$111,000	$0	$0
Tidal Delays/Fuel	23,000	0	0
Total	$294,000	$62,000	$13,000

TABLE VII

Total Annual Benefits

Benefit Catagory	Plan A	Plan B
Damage Reductions	$66,000	$115,000
Congestion and Tidal Delay Reductions	166,000	166,000
Total	$232,000	$281,000

ECONOMIC EVALUATION AND CONCLUSIONS

The benefits and costs of each plan are evaluated to determine economic justification. A benefit to cost ratio of 1.0 or greater is required for Federal participation in water resources improvement projects. Table VIII presents a comparison of the alternative navigation improvement plan's costs and benefits. Comparing benefit to cost (B/C) ratio's and net benefits, implementation of Plan A results in a higher B/C ratio and greater net benefits than Plan B.

TABLE VIII

ECONOMIC COMPARISON OF PROPOSED PLANS

	PLAN A	PLAN B
Annual Benefit	$242,000	$291,000
Annual Cost	$45,000	$306,000
Net Benefits	$197,000	-$15,000
Benefit to Cost Ratio	5.4	0.9

Bucks Harbor, Machiasport, Maine
Small Navigation Improvement

Reconnaissance Investigation

Appendix 3

Pertinent Correspondence

NEW ENGLAND DIVISION
U.S. ARMY CORPS OF ENGINEERS
WALTHAM, MASSACHUSETTS

TOWN OF MACHIASPORT
Office of Selectmen
Liberty Hall, Machiasport, Maine 04655
Telephone: (207) 255-4516

January 23, 1990

Donald Birmingham
U.S. Army Corps of Engineers
New England Division
424 Trapelo Rd.
Waltham, MA 02254-9149

Subject: Bucks Harbor Small Navigation Improvements.

We have received and reviewed the Navigation Improvement Study Reconnaisance report dated January 1990.

We are pleased with the positive finding by Division Engineer Daniel M. Wilson that implementation of Plan A "would result in significant annual benefits", that "this plan of improvement has been determined to be economically justified", and that "Federal participation in a detailed project study phase II is warrented."

We enthusiastically support his recommendation to proceed into the detailed project study phase.

Sincerely,

Allan Larson, Chairman
Board of Selectmen

Selectman:

MAINE HISTORIC PRESERVATION COMMISSION
55 Capitol Street
State House Station 65
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone:
207-289-2133

March 1, 1989

Joseph L. Ignazio
Chief, Planning Division
Department of The Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Mr. Ignazio:

My staff has reviewed the location of the dredge disposal area for the Bucks Harbor Navigation improvement project.

I find that this project will have no effect upon any structure or site of historic, architectural, or archaeological significance as defined by the National Historic Preservation Act of 1966.

Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer

STATE OF MAINE

EXECUTIVE DEPARTMENT

STATE PLANNING OFFICE

JOHN R. McKERNAN, JR.
GOVERNOR

RICHARD H. SILKMAN
DIRECTOR

March 10, 1988

Larry Oliver
Planning Division
NED, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Larry,

I am writing to provide Maine's comments on the Corps' preliminary plans for dredging at Bucks Harbor in Machiasport. In compiling these comments I have consulted with staff at the Departments of Transportation, Marine Resources, and Environmental Protection, as well as the Washington County Regional Planning Commission. Most reviewers felt that the project is needed and justified, however, we have several specific comments which are presented below.

First, we have comments on your statement of the "problem" in Bucks Harbor and the accompanying economic analysis. Rob Elder at DOT has heard reports from local fishermen that vessels are being overturned and damaged by waves which break at the inner edge of the existing anchorage. The Corps should explore this cause of damage as well as the others presented.

DMR staff feel that damages due to grounding may be even greater than calculated, but they do not feel that tidal delays are causing fishermen an economic loss. Clarifying the statement about quahog landings, DMR staff say that landings may increase in Bucks Harbor as a result of the dredging project because boats from other harbors may move to Bucks Harbor. However quahog landings statewide will not increase.

The economic analysis should include a breakdown of the volume and cost estimates for maintenance and new dredging. The town should not be responsible for the costs of remedying the shoaling in the existing anchorage area and access channel. Also in the economic analysis, it appears that the damage calculation is inaccurate: 20 % of 60 boats equals 12 boats, not 20, as is figured in your benefit calculation.

184 STATE STREET, STATE HOUSE STATION 38, AUGUSTA, MAINE 04333 TEL. (207) 289-3261 or 3154

With respect to the environmental assessment we are generally in agreement with your presentation of concerns and we assume that you plan to do further surveys of the marine resources present in the harbor.

As you have noted, it is important that dredging not take place during the summer to minimize harm to lobsters. DMR has suggested that an October to June dredging season would be acceptable; you should discuss this further with DMR. DEP will probably require a full dredge spoil analysis for the area that will be dredged for the first time. I recommend that you contact the Land Bureau directly to ascertain their requirements.

Your dredge disposal plans are probably acceptable, but without specific information on the disposal location it is difficult to comment. I gather that the spoils from the original dredging project were dumped on quahog beds, and that the disposal site and adjacent area has since been intensively dragged for quahogs. There are probably few quahogs left in the area, making it an acceptable disposal site for this project. However, in assessing the impacts of disposing the spoils at the historic site, the Corps should consider doing an underwater survey.

One final recommendation suggested by DMR is that the access channel be extended so that it comes closer to the Coop pier at the head of the harbor. Presently, the water off the pier is shallow and making it deeper would effectively accommodate the needs of the local fishermen.

We appreciate the opportunity to comment at this early stage of the planning process. If you have any questions about our concerns please give me a call.

Sincerely,

Katrina Van Dusen
Senior Planner

kvd/aal/1/27

MAINE HISTORIC PRESERVATION COMMISSION
55 Capitol Street
State House Station 65
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone:
207-289-2133

March 10, 1988

Mr. Joseph Ignazio
Planning Division
New England Army Corps of Engineers
424 Trapelo Road
Waltham, Mass. 02254-9149

Re: Bucks Harbor Navigation Improvement project

Dear Mr. Ignazio:

My staff has reviewed the proposed Bucks Harbor Navigation Improvement project, and existing data on the location of shipwrecks, and the likihood of encountering prehistoric archaeological sites. There are no known or likely significant archaeological or historic sites in the project area.

I find that this project will have no effect upon any structure or site of historic, architectural, or archaeological significance as defined by the National Historic Preservation Act of 1966.

Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer

COMMITTEES:
FOREIGN AFFAIRS
JOINT ECONOMIC COMMITTEE
SELECT COMMITTEE ON AGING

WASHINGTON OFFICE:
2464 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-1902
(202) 225-6306

OLYMPIA J. SNOWE
2D DISTRICT, MAINE

Congress of the United States
House of Representatives
Washington, DC 20515

April 1, 1987

DISTRICT OFFICES:

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(207) 764-5124

Col. Thomas A. Rhen
Division Engineer
New England Division, Corps of Engineers
Department of the Army
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Col. Rhen:

I would like to take this opportunity to express my support for a dredging project requested by the Town of Machiasport, Maine.

It is my understanding that the Town of Machiasport has asked the Corps to provide assistance with the redredging and protection of Bucks Harbor. The Town has made application to the Corps for a study under the provision of Section 107 of the River and Harbor Act of 1960. This project is of great importance to the continued growth and prosperity of Machiasport, and I would like to learn what action the Corps will be able to take on Machiasport's application.

Thank you for your attention to this matter.

Sincerely,

Olympia Snowe

OLYMPIA J. SNOWE
Member of Congress
2nd District, Maine

OJS:nml

Town of Machiasport

Machiasport, Maine 04655

March 5, 1987

Colonel Thomas A. Rhen
Division Engineer
New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, MA 02254-9149

Dear Col. Rhen:

During the years since the U.S. Army Corps of Engineers last assisted Bucks Harbor with navigational improvements changes have taken place.

Some of these were natural and caused by river and tidal currents resulting in a resiltation of the dredged areas, others have come from the increased use of the harbor as a port for a growing fleet of fishing vessels. Many of these are larger boats equiped with drags for quahog harvesting.

Last year we engaged the engineering firm of Kimball Chase to assist us with a harbor plan that would more efficiently address the problems of dock space, mooring patterns and harbor protection.

The Kimball Chase report indicates a need;

* to restore and enlarge dredged channel and mooring areas
* to consider an extension of existing warf
* to provide protection (possible breakwater)for mooring area.

For these reasons we would request a corp study of navigation improvements to Bucks Harbor under the authority of Section 107 of the River and Harbor Act of 1960, as amended.

Sincerely,

Allan S. Larson
Chairman - Selectman